



US 20190069451A1

(19) **United States**

(12) **Patent Application Publication**
Myers et al.

(10) **Pub. No.: US 2019/0069451 A1**

(43) **Pub. Date: Feb. 28, 2019**

(54) **ELECTRONIC DEVICES WITH FLEXIBLE DISPLAYS**

(71) Applicant: **Apple Inc.**, Cupertino, CA (US)

(72) Inventors: **Scott A. Myers**, Saratoga, CA (US);
Richard H. Koch, Cupertino, CA (US)

(21) Appl. No.: **15/840,725**

(22) Filed: **Dec. 13, 2017**

(52) **U.S. Cl.**

CPC **H05K 7/20954** (2013.01); **G09G 2354/00** (2013.01); **H05K 5/0221** (2013.01); **H01L 51/524** (2013.01); **H05K 7/20963** (2013.01); **H01L 51/529** (2013.01); **H01L 27/3225** (2013.01); **G09G 3/3208** (2013.01); **G06F 1/1652** (2013.01); **G09G 5/10** (2013.01); **G09G 5/14** (2013.01); **H01L 2251/5338** (2013.01); **G09G 2380/02** (2013.01); **G09G 2320/0626** (2013.01); **G09G 2330/04** (2013.01); **G06F 1/1681** (2013.01); **G06F 1/1694** (2013.01); **G09G 2320/041** (2013.01); **H05K 5/0017** (2013.01)

Related U.S. Application Data

(60) Provisional application No. 62/551,170, filed on Aug. 28, 2017.

Publication Classification

(51) **Int. Cl.**

H05K 7/20	(2006.01)
H05K 5/00	(2006.01)
H05K 5/02	(2006.01)
H01L 51/52	(2006.01)
H01L 27/32	(2006.01)
G09G 3/3208	(2006.01)
G06F 1/16	(2006.01)
G09G 5/10	(2006.01)
G09G 5/14	(2006.01)

(57)

ABSTRACT

An electronic device may have a hinge that allows the device to be flexed about a bend axis. A display may span the bend axis. To facilitate bending about the bend axis without damage when the display is cold, a portion of the display that overlaps the bend axis may be selectively heated. The portion of the display that overlaps the bend axis may be self-heated by illuminating pixels in the portion of the display that overlap the bend axis or may be heated using a heating element or other heating structure that provides heat to the portion of the display overlapping the bend axis. Control circuitry may engage a latching mechanism that prevents opening and closing of the electronic device when the temperature of the portion of the display that overlaps the bend axis is below a predetermined temperature.

